

REMARKS

This Amendment is submitted simultaneously with filing of a Request for Continuing Examination.

In the last Office Action the Examiner rejected the claims under 35 USC 103(a) over the European patent document to Evans in view of the U.S. patent to Merritt et al.

In the Examiner's opinion the present invention can be considered as obvious from the combination of the references.

It is respectfully submitted that the new features of the present invention which are now defined in the claims were not disclosed in the references and cannot be derived from them as a matter of obviousness.

In accordance with the present invention the unpopped corn kernels are introduced into a hypersaturated brine composed of water and sodium chloride in a container so that the unpopped corn kernels are kept there and are swollen from absorbing the brine, then the swollen corn kernels that have absorbed the brine are taken from the container and dried until they recover their original moisture level, and additional food

flavor is incorporated either during drying of the corn kernels or during swelling of the corn kernels, and then the corn kernels with the additional food flavor are surface coated with fixing agents to prevent a loss of the incorporated food flavor.

The Evans reference discloses soaking the kernels in innocuous solution of water and sodium chloride and then drying them with additional flavoring; however, it does not disclose coating with fixing agents to prevent a loss of the additional food flavoring.

The Merritt discloses a method of preparing a free-flowing flavorant coated unpopped corn by spray coating of fixing agents, etc. It is however done not after the swelling of the unpopped corn kernels in a solution of water and sodium chloride by absorbing the brine, and subsequent to drying of the unpopped corn kernels. Thus, the Merritt reference had nothing to do with the method disclosed in the Evans reference.

Also, none of the references teaches incorporating of an additional food flavor into the preliminarily swollen in brine and then dried unpopped corn kernels, after drying of the corn kernels.

The references do not contain any hint, suggestion or motivation for their combination with one another. It is believed that Claim 5 clearly and patentably distinguishes the present invention from the prior art applied by the Examiner.

It should be emphasized that while the Evans reference does not teach a surface coating of the corn kernels with a fixing agent after introducing the food flavor to prevent a loss from the corn kernels in the food flavor, the Merritt reference teaches a kernel coating with a flavorant only. However, it does not teach that the flavorant is applied before, after the swelling step or after the drying step, to the corn kernels, and then a coating is provided to prevent a loss from the corn kernels of the food flavors incorporated in them before.

This however is a very important difference because only with this approach it is possible to introduce into the corn kernels any flavoring agent without any limitations, which are applicable to a future coating, just for the purpose of providing the optimal incorporation of the food flavor and obtaining the corn kernels with the food flavor. Then, an additional, subsequent coating with a fixing agent only, provides the sole function of fixation of the food flavor, and this coating is performed in accordance with the parameters of the coating process exclusively,

without taking into consideration the required parameters of the flavoring process.

In view of the above presented remarks and amendments, it is believed that Claim 5 should be considered as patentably distinguishing over the art and should be allowed.

As for the dependent claims, these claims depend on Claim 5, and together with Claim 5 they define their own additional features, so that the process steps provided in the dependent claims in combination with the process steps provided in Claim 5 clearly and patentably distinguish the present invention from the prior art as well.

In addition to the above presented arguments, the applicant respectfully submits that the corresponding European patent has been granted. During the prosecution of the European patent the same references, namely Evans and Merritt, were cited, and nevertheless the European patent was issued for the invention which is different from the Evans and Merritt references and from their combination.

Reconsideration and allowance of the present application is most respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawings be further amended or corrected in formal respects in order to place this case in condition for final allowance, then it is respectfully requested that such amendments or corrections be carried out by Examiner's Amendment, and the case be passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, he is invited to telephone the undersigned (at 631-549-4700).

Respectfully submitted,



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(19)



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(54) CORN GRAIN-FLAVOURING METHOD

(57) The invention relates to a corn grain-flavouring method. The inventive method consists in creating a hypersaturated brine in a suitably-sized container, using a mixture of water and sodium chloride in suitable quantities in relation to the amount of corn to be treated. The corn grain is then introduced into the aforementioned brine and maintained thus for a period of time necessary in order for the corn to absorb all of the brine. Next, the

corn is dried, by spreading same over perforated trays and applying hot air, until the original moisture level of the corn grains is obtained. Subsequently, once the corn has been dried, a surface coating is applied to the grain using a food fixative, such as, for example, a food lacquer and, finally, the corn is packaged.

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Description**OBJECT OF THE INVENTION**

- [0001] The present invention relates to a corn grain-flavouring method intended for human consumption.
[0002] The main object of the invention is to achieve an optimal degree of salting for corn kernels with the subsequent effect on their flavour, as well as optionally incorporating any other supplementary food flavouring, whether it is salty or sweet.
[0003] The invention is therefore intended for the food industry.

BACKGROUND OF THE INVENTION

- [0004] As is well known, corn kernels, which are consumed either in their natural state or toasted, are included within the wide range of products usually consumed as a "snack".
[0005] Corn kernels are normally marketed as a "salty" product with a strong flavour.
[0006] In order to achieve this flavouring of corn according to the intended use of the popcorn preparation, for example in the case of products intended to be prepared by means of microwaves, manufacturers currently mix the corn in sealed containers with butter, salt or flavouring agents, which makes the corn lose its natural qualities; other manufacturers add these flavouring agents after the corn has expanded, once it has become popcorn, also reducing the quality and durability of the product characteristics.

DESCRIPTION OF THE INVENTION

[0007] The process proposed by the invention resolves the drawbacks set forth above, and the following operational steps are established therein for that purpose:

- A predetermined amount of water, in accordance with the amount of corn kernels to be treated, is introduced in a container with a suitable capacity, and sodium chloride is incorporated to the foregoing, also in a suitable amount, so as to obtain hypersaturated brine.
- The water-sodium chloride mixture is subjected to a stirring step to facilitate obtaining brine.
- Corn kernels are introduced in the container after obtaining the brine.
- The corn is kept in the brine for a time comprised between 8 and 20 hours at room temperature and under atmospheric pressure until the corn absorbs all the brine. The variability of the time for this operational step is determined by the type of corn kernels used, i.e. by the characteristics and origin of the corn, which also affect the amount of salt and water used.
- Then a corn drying step is carried out, such that after

it is taken out of said container it is spread out on perforated trays, through the perforations of which hot air passes, returning the corn kernels to their natural moisture level, which drying step is carried out for a time comprised between 1 to 2 hours according to the drying air temperature and the type of corn.

- Any food flavour can also be incorporated during this drying process or in the prior step of swelling the corn.
- Finally, and after drying the corn, the kernels are subjected to a surface coating step with a fixing agent for foods, such as food-grade shellac for example, to prevent the loss of the flavouring agents, which step could be carried out inside a rotating drum or in another similar element.
- The product is finally packaged.

[0008] The possibility of drastically reducing the brine absorption step has been provided for by changing the room temperature and atmospheric pressure conditions mentioned above, specifically by using a pressurized container and/or by substantially increasing the temperature of the water, a shortening of the process which is obviously obtained at the expense of an increase in energy consumption.

PRACTICAL EMBODIMENT OF THE INVENTION

- [0009] Ninety liters of water and 25 kg of sodium chloride were introduced in a container with a 1000 liter capacity.
[0010] After stirring the mixture, hypersaturated brine was obtained after 12 hours.
[0011] Then 300 kg of corn kernels of the popping corn variety were introduced in the container.
[0012] The corn pulp had absorbed all the brine after 8 to 12 hours, said absorption being carried out at room temperature and under atmospheric pressure.
[0013] Then the corn was spread out on perforated trays for which hot air was supplied, specifically at a temperature of 48°C, drying the corn kernels after 60 minutes, the kernels returning to their original moisture level.
[0014] The dried corn was then introduced in a rotating drum in which food-grade shellac was applied as a fixing agent, as well as flavouring agents, and after 60 minutes the entire surface of the corn kernels was coated with said fixing agent.
[0015] The product was finally packaged, being suitable for consumption thereof.
[0016] It is therefore understood that the product starts off raw and finishes raw, treated so as to be used in any type of machine for its expansion, for example in microwaves, paella dishes, pans, hot air machines, etc.
[0017] Having sufficiently described the nature of the invention as well as a practical embodiment, it is stated for all effects and purposes that the described elements can be modified provided that this does not involve an

alteration of the essential features of the invention which are claimed below.

Claims

1. A process for flavouring corn kernels, specifically corn kernels intended for human consumption, characterized in that the following operational steps are established therein:
- A predetermined amount of water, in accordance with the amount of corn kernels to be treated, is introduced in a container with a suitable capacity, and sodium chloride is incorporated to the foregoing, also in a suitable amount, so as to obtain hypersaturated brine.
 - Corn kernels are introduced in the container after obtaining the brine.
 - The corn is kept in the brine for a time comprised between 8 and 20 hours at room temperature and under atmospheric pressure.
 - Then a corn drying step is carried out, after it is taken out of said container, by means of spreading it out on perforated trays and applying hot air for a time comprised between 1 to 2 hours until the corn kernels recover their original moisture level.
 - The corn kernels are subjected to a surface coating with a fixing agent for foods, such as food-grade shellac and flavouring agents for example.
 - The product is packaged.
2. A process for flavouring corn kernels according to claim 1, characterized in that the water-sodium chloride mixture can be subjected to a stirring step to facilitate obtaining brine.
3. A process for flavouring corn kernels according to claim 1, characterized in that the step of keeping the corn in the brine can be carried out under pressure and/or at a temperature substantially higher than room temperature in order to shorten the time of said step.
4. A process for flavouring corn kernels according to claim 1, characterized in that any food flavour can be incorporated to the corn either in the corn swelling step or in the drying step.

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INTERNATIONAL SEARCH REPORT

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| International application No. PCT/ES 2004/000471 |
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| A. CLASSIFICATION OF SUBJECT MATTER CIP ⁷ A23L 1/12, A23P 1/08 According to International Patent Classification (IPC) or to both national classification and IPC | | |
|---|--|---|
| B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) CIP ⁷ A23L 1/10, A23P 1/08, A23L 1/03 | | |
| Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched | | |
| Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CIBEPAT, EPODOC, WPI, PAJ, PSTA | | |
| C. DOCUMENTS CONSIDERED TO BE RELEVANT | | |
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
| A | WO9423589A1 (GRAF, E.) 27.10.1994; Claims 1-4, 11, 17 | 1, 4 |
| A | FR2680082A1 (BESSO, R.) 12.02.1993; Abstract; Claims 1, 7, 9-10 | 1-4 |
| A | US4767635A (MERRIT, C.G. ET AL.) 30.08.1988; Abstract; Claims 3-5 | 1, 4 |
| A | EP217368A2 (EVANS, D.A.) 08.04.1987; Abstract; Claims 1-2, 5-6 | 1, 3-4 |
| <input type="checkbox"/> Further documents are listed in the continuation of Box C. | | <input type="checkbox"/> See patent family annex. |
| <p>* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "B" earlier document but published no later than the international filing date "I," document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed</p> <p>"T" later document published after the international filing date or priority date and not in conflict with the application to be cited to understand the principle or theory underlying the invention "X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is taken in combination with one or more other documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family</p> | | |
| Date of the actual completion of the international search (29 Noviembre 2004) | Date of mailing of the international search report 10.12.2004 | |
| Name and mailing address of the ISA/ S.P.T.O. Facsimile No. | Authorized officer Telephone No. | |

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INTERNATIONAL SEARCH REPORT
Information on patent family members

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| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|--|------------------|---------------------------------|--------------------------|
| WO 9423589 A | 27.10.1994 | US 5284666 A AU 5088393 A | 08.02.1994 08.11.1994 |
| FR2680082 A | 12.02.1993 | NONE | ===== |
| US4767635 A | 30.08.1988 | NONE | ===== |
| EP 0217368 A | 08.04.1987 | EP 19860113471 JP 62111653 A | 01.10.1986 22.05.1987 |